CLAIMS

1. A photosensitive resin printing plate precursor comprising, on a support in this order: a photosensitive resin layer (A) containing a water-soluble or water-dispersible resin and an ultraviolet-curable monomer; a water-insoluble heat-sensitive mask layer (C) containing an infrared-absorbing material.

2. The photosensitive resin printing plate precursor according to Claim 1, wherein the water-insoluble heat-sensitive mask layer (C) is crosslinked with a curable resin.

3. The photosensitive resin printing plate precursor according to Claim 2, wherein the curable resin is a combination of: at least one compound selected from the group consisting of multifunctional isocyanates and multifunctional epoxy compounds; and at least one compound selected from the group consisting of urea-based resins, amine-based compounds, amide-based compounds, hydroxy group-containing compounds, carboxylic compounds, and thiol-based compounds.

4. The photosensitive resin printing plate precursor according to Claim 1, wherein the water-insoluble heat-sensitive mask layer (C) is a metal thin film.

5. The photosensitive resin printing plate precursor according to Claim 1, further comprising an adhesion-adjusting layer (B) between the photosensitive resin layer (A) and the heat-sensitive mask layer (C).

6. The photosensitive resin printing plate precursor according to Claim 5, wherein the adhesion-adjusting layer (B) contains a water-soluble or a water-dispersible resin.

7. The photosensitive resin printing plate precursor according to Claim 1, wherein the photosensitive resin layer (A) contains a polyamide resin.

8. The photosensitive resin printing plate precursor according to Claim 1, wherein the photosensitive resin layer (A) contains polyvinyl alcohol, partially saponified polyvinyl alcohol, or their modified form.

9. The photosensitive resin printing plate precursor according to Claim 1, wherein the heat-sensitive mask layer (C) contains an acrylic resin and no nitrocellulose.

10. The photosensitive resin printing plate precursor according to Claim 1, further comprising: a protective layer

(E); or a peel assist layer (D) and a protective layer (E), on the heat-sensitive mask layer (C).

11. The photosensitive resin printing plate precursor according to Claim 10, wherein the peel assist layer (D) contains an infrared-absorbing material and/or a pyrolyzable compound.

12. A method for producing a photosensitive resin printing plate precursor, the method comprising the steps of:

(i) forming a photosensitive resin sheet by depositing a photosensitive resin layer (A) on a substrate;

(ii) forming a heat-sensitive mask element including a water-insoluble heat-sensitive mask layer (C); and

(iii) laminating the surface of the photosensitive resin layer (A) of the photosensitive resin sheet to the heat-sensitive mask element.

13. The method for producing the photosensitive resin printing plate precursor according to Claim 12, wherein the heat-sensitive mask element includes a protective layer (E) and the heat-sensitive mask layer (C), and the lamination is performed such that the heat-sensitive mask layer (C) of the heat-sensitive mask element comes into contact with the

surface of the photosensitive resin layer (A).

14. The method for producing the photosensitive resin printing plate precursor according to Claim 13, wherein a peel assist layer (D) is disposed between the protective layer (E) and the heat-sensitive mask layer (C).

15. The method for producing the photosensitive resin printing plate precursor according to Claim 12, wherein the heat-sensitive mask element includes the heat-sensitive mask layer (C) and an adhesion-adjusting layer (B), and the lamination is performed such that the adhesion-adjusting layer (B) of the heat-sensitive mask element comes into contact with the surface of the photosensitive resin layer (A).

16. The method for producing the photosensitive resin printing plate precursor according to Claim 12, wherein, in the step of forming the heat-sensitive mask element, the heat-sensitive mask layer (C) is deposited while being heated, thereby forming a crosslinked structure therein.

17. A method for producing a letterpress printing plate, the method comprising the steps of:

(1) preparing the photosensitive resin printing plate

precursor as set forth in any one of Claims 1 to 11;

(2) forming an image mask (C') by imagewise irradiating the heat-sensitive mask layer (C) with infrared laser light;

(3) exposing through the image mask (C') to ultraviolet light to form a latent image on the photosensitive resin layer (A); and

(4) removing the image mask (C') and portions unexposed to ultraviolet light of the photosensitive resin layer (A) by development with a water-based liquid.

18. The method for producing the letterpress printing plate according to Claim 17,

wherein (1) the photosensitive resin printing plate precursor as set forth in Claim 10 is used, and

(2) at least part of the protective layer (E) is peeled before the heat-sensitive mask layer (C) is imagewise irradiated with infrared laser light